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ABSTRACT

The Questioning Strategies Observation System (QSOS) is designed to record verbal behaviors occurring in the classroom which are associated with the teacher's use of questions. Twenty-four categories are used in three main sections: initiation of the question, response to the question, and reaction to the response. Under initiation, the categories first designate the pupils expected to answer (MDES, mass designated; NDES, no one designated; GDES, group designated, and IDES, individual designated), and secondly _dentify the guestion's cognitive level (knowledge, comprehension, application, analysis, synthesis, evaluation, affectivity, and procedure). Two additional types of question are probing and redirecting, intended to elicit additional responses. The response categories are: designated (the response is the expected one), independent (pupils respond without being called on by the teacher), intercepted (a rupil other than the one called on responds), aborted (something interferes to prevent a response), and no response (the question fails to elicit any response). Feaction categories are: approval, acceptance, rejection, criticism, and no evaluation. This version of QSOS was developed for a specific research project and does not include categories for pupil initiated guestions or textbook or preframed guestions. These will be included in a more fully developed version. (MBM)



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Kevin R. Morse
O.L. Davis, Jr.

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THE QUESTIONING STRAZGIES OBSERVATION SYSTEM (QSOS)

Kevin R. Morse O.L. Davis, Jr.

The Questioning Strategies Observation System (QSOS) is designed to record verbal behaviors occurring in the classroom setting which are associated with the teacher's use of questions. Twenty-four separate categories are included in the system to describe components of the questioning interchange.

In recent years, a host of systems have been developed to record classroom interaction objectively. Beginning with Anderson and Brewer (1945) and continuing to the present time, systems designed to record various aspects of classroom behavior have evolved. Each system was developed for the purpose of recording selected dimensions of the instructional environment. Notable among these have been Withall's (1949) measure of socio-emotional climate, Flander's (1965) interaction analysis, and the OSCAR (Medley and others, 1968). These three systems represent efforts to identify and categorize selected classroom behaviors for the purpose of deriving measures designed to represent some global aspect of teacher pupil relationships.

The primary concern of the major systems now being used (e.g., OSCAR, Flanders) has been rather gross dimensions of the classroom environment. These systems attempt, through analysis of behaviors abstracted and quantified, to provide a "picture" of the classroom climate for pupil learning. This "picture" subsequently can be used for a number of purposes such as to provide data for research comparisons and to serve as a means for providing feedback to teachers regarding their teaching behaviors.



A major decision in developing a system for observing classroom behavior is the limitation of the number of behaviors to be recorded. Each system should be designed, in effect, to include only those behaviors which directly contribute to the classification of events relating to the principal focus of interest. For this reason, no system attempts to include all or even most of the behaviors that take place in the course of an observation period.

The Questioning Strategies Observation System (QSOS) focuses on those behaviors, primarily of the teacher, which have been identified as being associated with classroom questioning. A number of systems or formats have been designed to record selected questioning behaviors (e.g., Adams, 1964; Davis and Tinsley, 1967; Floyd, 1960; Guzak, 1967; Harris and McIntyre, 1964; Rogers, 1969). Other systems (e.g., Flanders, OSCAR) include categories for certain questioning behaviors. None of these, however, encompasses the range of behaviors included in the QSOS.

The present version of the QSOS was developed for a specific research project in a Teaching Laboratory setting (Morse, 1969) and is the latest development in a continuing research interest on classroom questioning behavior (Davis, Morse, Rogers, and Tinsley, 1969). Consequently, several categories of questioning strategies were not included. Such categories (e.g., pupil initiated question, textbook or preframed questions) can be added to the basic format and will be components of a more fully developed QSOS to be issued later.



Design of the QSOS

The design of the QSOS is based on the conception of questioning strategies as composed of interchanges between teacher and pupils which consist of initiating, responding, and reacting. This conception clearly relates to the work of Bellack and others (1966). <u>Initiation</u> is that component of the interchange by which the teacher attempts to elicit pupil responses by formulating questions and directing them to (a) pupil(s). <u>Response</u> is the behavior(s), or absence of behavior, of pupils subsequent to the teacher's initiation -- the attempt to initiate the interchange. <u>Reaction</u> is the manner of the acknowledgement of teacher's pupil responses and constitutes the completion of the interchange. In typical strategies of questioning, a number of interchanges occur, generally in rapid succession.

Each interchange in the classroom setting is categorized four times in the same column on the QSOS form. The observer first categorizes the teacher's <u>initiation</u> question on the basis of how it was directed to the class, by marking one of the first six categories. The second categorization identifies the cognitive level of the question and is marked in one of categories seven through fourteen. The third categorization notes the type of pupil <u>response</u> to the question and includes categories 15 through 19. The last categorization of an interchange records the teacher's <u>reaction</u> to the pupil response and uses one of the final five categories of the system. The resulting record of questioning interchanges during an observation preserves sequences as well as provides frequencies of occurance of events.



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QSOS Categories and Definitions

Initiation. Interrogative statements made by teachers intended to elicit a response from (a) pupil(s) initiate a questioning interchange. Rhetorical questions, under this rule, are excluded from QSOS classification. Two sets of QSOS categories are utilized to record these initiation questions. The first notes the teacher's designation of (the) pupil(s) expected to answer the question. The second set of categories identifies the question's cognitive level (Bloom, 1956) or notes affectivity or procedure if the question does not have cognitive orientation. All recording begins with teacher questions.

MDES Mass designated. The entire class is expected to respond to the question. Used often in drill, especially by language and mathematics: teachers. Examples:

"Who was our first president?" (Whole class responds.)

"Como esta usted?" (Class responds, "Muy bien, gracias.")

NO one designated. Teacher offers question to entire class without indicating who should respond. Pupil answers independently. Example:

"Who invented the light bulb?" (John raises hand.)
"John?"

GDES Group designated. First, teacher offers question to entire class, then calls on specific pupil to respond. Example:

"Why did the candle go out?" "John?" (John responds.)

IDES Individual designated. First teacher calls on pupil, then asks question. Example:

"John. Why did Benjamin feel alienated?"

Two categories of questions which my initiate an interchange but do not elicit <u>initial</u> responses are <u>probing</u> and <u>redirecting</u>. Questions in these categories are used to continue to elicit pupil response.



PROB Probing. Calls on the <u>same</u> pupil responding to the previous question to extend, clarify, or justify initial response.

Examples:

"Can you add to that, John?"

"Why do you answer that way?"

<u>REDR</u> <u>Redirecting</u>. Calls on <u>different</u> pupil to react to response of first pupil. Examples:

"Do you agree with him?"

"How would you answer that?"

When a question has been categorized into a designation category, it is also classified into one of the following eight categories. This set relates to the intellectual process most likely required of the pupil in his formulation of a response or to whether the teacher expects the pupil to deal with his attitudes or feelings or a classroom procedure.

KNOW Knowledge. For purposes of observation and recording, perhaps easiest is to think of knowledge as a situation requiring memory. In most instances, this category records requests for the recall of specific information. Though the type of information called for may vary, the process is basically one of calling to mind some previously known bit of information.

Examples:

"John, how is the pythagorean theorem stated?"
"What were the five major contributing causes of the
American civil war?"

"What did we decide upon as the reason Poe wrote 'The Raven'?"

COMP Comprehension. This category represents the lowest level of cognitive understanding. Pupils who demonstrate comprehension can translate a communication from one form to another. They can interpret by reordering or rearranging a communication or generally demonstrate the ability to



grasp the thought of a word. They can predict or extrapolate trends or tendencies. Examples:

"What does 'From each according to his ability, to each according to his needs' mean to you?"
"In your own words, how would you explain a simile?"
"What are the possible consequences of the pollution of our air and water supplies?"

APPL Application. Here pupils use abstractions in particular and concrete situations. In a sense, the ability to generalize. Examples:

"What will happen if we place a glass over this lighted candle?"

ANAL Analysis. Pupils breakdown a communication, verbal or written, into its constituent elements or parts so as to distinguish clearly what ideas are being expressed.

Examples:

"What is the author of this editorial cartoon attempting to make us believe?"

"How does the candidates written work compare with his public statements?"

"What is the pattern and form used in this painting in your judgment?"

SYN Synthesis. Pupils combine discrete elements to form a whole. Also, pupils demonstrate their ability to write or speak in an effective, organized manner and/or to discover and generalize from experience. Examples:

"How would you test to see whether decomposition always occurs under these conditions?"
"How would you relate to us that experience if you wanted to impress us?"

"What would you guess was the cause of this phenomenon and how could you find out if you were right?"



EVAL Evaluation. Pupils make judgments about the quality of a procedure or materials for certain specified purposes.

They assess something on the basis of a set of criteria.

Examples:

"From a scientific standpoint how reliable were the results obtained by Newton in his early experiments with motion?"

"How well does Picasso represent the school of modern, impressionistic art?"

"Is the argument used by the anti-floridation people in this editorial valid or invalid?"

AFEC Affectivity. This category includes questions that deal with pupil opinion, attitudes, feelings and beliefs.

These questions do not demand a demonstration of any kind of knowledge or skill. Examples:

"Did you enjoy reading the chapter on communication?"
"What do you think about the war on poverty?"
"Was the homework extremely difficult?"

PROC Procedure. This category deals with classroom organization; routine, or management. Examples:

"What page are we on?"

"Who did question four correctly?"

"Is the back window open?"

Response. Pupil(s) responses are classified on the basis of whether the questions asked were answered as expected or in some other way. The correctness or adequacy of the response is not a factor of consideration. The five categories used to record responses are:

<u>DES</u> <u>Lesignated</u>. Whether or not the question was mass, group, or individual designated, the response is the expected one.
The designated person or group responds.



IND Independent. A pupil or group volunteers response independently, that is without being called upon by the teacher. Pupils who raise their hands and are then called upon are considered to have responded independently.

Intercept. This response occurs when a pupil other than the one called upon responds or when the teacher answers the question himself.

NOR No response. The teacher's question fails to elicit (a) pupil(s) response.

ABT Abort. Teacher asks question but something interferes with the interchange which displaces a response. Such an event might be an irrelevant pupil comment, a class interruption, or other unanticipated occurrence.

Reactions. The teacher's means of acknowledging pupil responses. Reactions can be positive or negative, depending upon both the inferred intent of the teacher and the effect(s) on the pupil. Categories of reaction are:

NOEV No evaluation. Teacher does not react directly or personally to pupil response.

APPR Approves. Teacher approves of pupil response. Examples:
"Very good."

"Well done."

"That's what I wanted."

ACC Accepts. Teacher accepts pupil response. Examples:

"Right."

"Okay."

REJ Rejects. Teacher rejects pupil response. Examples:

"No."

"Wrong."

"That's not the correct answer."

CRIT Criticizes. Teacher criticizes pupil. Examples:

"That's not right at all."

"You know better than that."

"That's a terrible answer."



Some Measures Yielded by QSOS

For the purpose of analyzing the questioning behaviors of teachers, QSOS measures may be derived several ways. Frequencies of category events may be summed for each category separately. In addition, frequencies of events in two or more categories may be summed. Another procedure may include a count of categories in a get in which events have been recorded. Seven special measures have been developed and used in research (Morse, 1969). Other measures are under consideration and may be included in subsequent versions of this manual. The seven messures and their definitions are:

- (a) Question Quantity: The sum of all frequencies in all categories of teacher questions (MDES + IDES + GDES + NDES + PROB + REDR).
- (b) Cognitive Quantity: The percentage of teacher questions which are categorized as cognitive (KNOW + COMP + APPL + ANAL + SYN + EVAL) + (KNOW + COMP + APPL + ANAL + SYN + EVAL + AFEC + PROC).
- (c) Cognitive Quality: Weights are assigned to the six cognitive categories: KNOW = 1; COMP = 2; APPL = 3; ANAL = 4; SYN = 5; EVAL = 6. The frequency of events in a category is multiplied by its weight. All resulting products are summed and an arithmetic mean calculated. The resulting mean is the score for cognitive quality.
- (d) <u>Tactical Versatility</u>: A count of the total number of QSOS categories used by the teacher (19 possible).
- (e) Question Success: The percentage of all questions which result in designated and independent pupil responses.
- (f) Reaction Quality: The average level of teacher reaction to pupil responses. Weights are assigned to reaction categories: ACC =+1; CRIT = 3; REJ = -1; APP = +3; NOEV = 0. The frequency of events in each category is multiplied by its weight. The resulting products are added and an arithmetic mean calculated. The resultant mean is the score for Reaction Quality.



As in any system designed to record classroom we bal behaviors the categories of the QSOS do not attempt to describe all the possible elements of the questioning strategy. The QSOS categories, however, do provide a basis for comparisons between teachers and/or groups of teachers.

The relationships between the seven measures derived from this version of the QSOS were determined in one research study (Morse, 1969). Observations, using audio tape recordings, were made of the teaching behaviors in a Teaching Laboratory of 86 beginning teacher candidates. After scores were derived for each subject, a correlation matrix (see Table 1) was computed to display the relationship between the seven measures.

The several measures appear highly related, for the most part. Most are, in fact, comprised of similar items. Question success, of all seven measures, seems to be independent; its items are not included in another measure. Even though most of the measures are not statistically independent, their relationships are quite low. For exploratory studies, the present measures appear useful. Other measures, less dependent, should be developed and tested.



TABLE 1

Intercorrelations of Seven Measures Derived from QSOS

,			•				
Cognitive Versatility	.1395	.1732	.2157*	.5862**	0129	0563	
Reaction Quality	.2539*	.2412*	2878**	1089	.1042		
Question Success	8600*-	.0812	0059	1882			
Tactical Versatility	.3952**	1344	.0752				
Cognitive	2501*	2477*				-	
Cognitive Quantity	.2433						

Tactical Versatility
Oquestion Success
Reaction Quality

Question Quantity Cognitive Quantity

Cognitive Quality

*Significant at the .05 level **Significant at the .01 level

Observer Training and Reliability

Observers have been trained to use the QSOS in some 15 hours over a one-week period of time. Understanding the category definitions was a first step. Classification of definitions, in group discussion, was held prior to additional clarification while listening to practice audio tapes. Additional sessions recording QSOS behaviors using audio tapes of recorded classroom lessons were held; records were compared and further clarification reached. Inter-observer reliability coefficients over a training tape ranged from .66 to .74 over all QSOS categories. One explanation of the low coefficients is the difficulty experienced by observers in differentiating the cognitive categories of KNOW (knowledge) and COMP (comprehension), the most frequently used cognitive categories. For the seven derived measures, reliability coefficients ranged from .91 to .94.



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QUESTIONING STRATEGIES OBSERVATION SYSTEM

Teacher		Teach	Date
Subject		Elapsed Time	! Coder_
IDES SOCIO	00000 00000 00000 00000 00000 00000	00000 00000	0 0 0 0 0 MDES
PROB 10000 REDR 00000			D D D D D PROB REDR
KNOW 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		00000 00000 00000 00000 00000 000000 00000 00000	0 0 0 0 0 0 KNOW
AFEC DDDDDPROC DDDDDDDD			0 0 0 0 0 AFEC
IND OOOOO INT OOOOO NOR OOOOO		00000 00000 00000 00000 00000 00000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	0 0 0 0 0 NOEV 0 0 0 0 0 0 APP 0 0 0 0 0 0 REJ 0 0 0 0 0 CRIT
1. Question Qua	intity		
2. Cognitive Qu	antity		
3. Cognitive Qu	ality		
4. Tactical Ver	satility		
5. Question Suc	cess		
Reaction Qua		16	

7. Cognitive Versatility

APPENDIX B

Sample Tape-Recorded Transcript Coded Using Questioning Strategies Observation System (QSOS)

Statements |

Code

T: This is a discussion on the Magna Charta and its implications on how its affected the development of way the United States government and what it has done to further civil rights. After the battle of Runnymede in England the English Barons forced King John to sign the Magna Charta and in the Magna Charta these Barons demanded civil rights. They demanded that the King listen to what they wanted and respect their rights as individual people instead of having the government function entirely for the benefit of the state but it should benefit for the good of the people as well. This was the first document of its kind and it was really the beginning of individual rights. It started government for the people and by the people instead of government just for the good of the state. O.K. Can someone tell me why this was important to the development of late democratic governments? Billy? GDES

COMP

Billy: Could you repeat the question please? ABT T: Why was this important to the later development of democratic governments? IDES COMP S: (No response.) NOR T: Well, without this the later governments wouldn't have had any individual rights provided. Like for instance, what in our constitution gives this individual rights, this civil rights to people? NDES

KNOW



s :	The Bill of Rights?	I
T:	Uh huh, and like when the constituion of the United	A
	States was being ratified a lot of the states objected	
	to the original constitution because it didn't have a	
	bill of rights and they wouldn't accept our constitution	
	until a bill of rights was added. So this shows you that	
	it's a major part of our government and this is one of	
	the major areas of conflict in government in the United	
	States is civil rights because people, some of these	
	individual groups feel that they don't have these rights.	
	Would you say that this would serve to limit the powers	
	of the government? Linda?	G
		A
Line	da: I think it would limit the powers of the government	D
	to some extent that's what the people want too. You're	
	talking about the Bill of Rights?	
T:	Yes, just civil rights in general. Like for instance,	A
	what would the United States be like without divil	
	rights?	P
Line	ia: Well everybody would be very discontented.	Ā
	Everybody feels like they want part, not have just one	
	person have complete control. And this gives people	
	more say in what they're doing.	
T:	Yes, and without civil rights we would more or less have	
	a totalitarian government where the government would	A
	control what you think and what you say and everything	
	you do more or less, without these civil rights.	
S :	Either that or this particular government would not have	
	lasted as long as it has.	
r:	Yes that's true. But would you say that civil rights	
	actually would limit the power of government?	I
	*	0
S :	Yes, I think so.	DI
	, · • • · · · · · · · · · · · · · · · ·	U

T: I think it does. Because without the civil rights the government could just completely run over the people and do whatever it wanted. Why was, say, there Articles of Confederation in the United States. One of the major reasons it failed was because it didn't provide as much in the way of civil rights as the people felt was necessary. What are some other ways that civil rights are guaranteed in the United States?

KNOW

ACC

S: You mean besides the Bill of Rights? NDES IND

T: Uh huh. ACC

S: You mean their power of government or something? PROB KNOW

DES T: Yes. This is one way that we exercise our civil rights, ACC by voting and by electing the people that represent us and these civil rights are also protected in some of the other amendments, like for example, the states have many rights which aren't delegated to the national government. And this is in a way a civil right because -- ah, what the constitution in effect says is that the national government has the power specifically given to it. Of course it has the implied powers too. But the powers which don't belong to the United States government belong to the people, like we give the government certain powers and whatever is left over is ours and they can't take that away from us -unless they do something to change it. The Magna Charta was the first document that actually guaranteed any civil rights to the people, the people demanded that this be done and this was a major limitation on the powers of the monarchy in England because the people demanded that the government couldn't just do anything they wanted without consulting the

GDES APPL

people. How would the government have developed differently if the people hadn't demanded this, these civil rights? Billy? people wouldn't have had any voice at all in their

Well, it would have been a totalitarian state where

Billy:

government and they would be just like puppets and have to do everything the government said. DES T: That's right. What-say take the major objectives of cur government and the major objectives of a totaliterian APP government and what is the difference? PROB COMP Billy: We have more voice in our government and can pick DES who we want to run our government -- we vote in the laws that we want to run our nation. That's right. And we run our government rather than the government running us. Does the Bill of Rights guarantee ACC just rights to individual people or does it say protect NDES your rights in courts of laws too? COMP S: It protects your rights in a court of law so you can get a speedy trial IND T: And it says that you're innocent until you're proven

guilty rather than being the other way around. This
guarantees that you have to have a fair trial and fair
representation and a jury of people to judge you not
just one person that passes judgment on you. And it
guarantees you someone to represent you, a lawyer. It
protects you from being put in jail without any reason,
like they have to make a charge against you and they can't
forbid you bail except in certain cases.

NOEV

- S: About the confederation -- didn't it have some kind of provisions, like being protected in a court of law and things like this or did it not?
- T: I think it did -- like the Articles of Confederation it was a bunch of separate states.

End of Tape

